What is claimed is:

1. A heat exchanger comprising:

a heating medium channel for passing a high-temperature heating medium;

a fuel channel provided adjacent to the heating medium channel and separated from the heating medium channels through a partition wall, the fuel channels being supplied with liquid fuel from above the heating medium channels to vaporize the liquid fuel by heat exchange with the high-temperature heating medium; and

a fuel supply plate provided above the heat medium channels, the fuel supply plate having a plurality of holes for passing the liquid fuel,

wherein a circumferential edge of a fuel-outflow-side opening portion of each of the plurality of holes is chamfered.

2. A heat exchanger comprising:

a heating medium channel for passing a high-temperature heating medium;

a fuel channel provided adjacent to the heating medium channel and separated from the heating medium channel through a partition wall, the fuel channels being supplied with liquid fuel from above the heating medium channel to vaporize the liquid fuel by heat exchange with the high-temperature heating medium; and

a fuel supply plate provided above the heat medium channels, the fuel supply plate having a plurality of holes for passing the liquid fuel,

wherein a spot-face is formed in a circumferential edge of a fuel-outflow-side opening portion of each of the plurality of holes.

3. A heat exchanger comprising:

a heating medium channels for passing a high-temperature heating medium;

a fuel channel provided adjacent to the heating medium channel and separated from the heating medium channels through a partition wall respectively, the fuel channel being supplied with liquid fuel from above the heating medium channel to vaporize the liquid fuel by heat exchange with the high-temperature heating medium; and

a fuel supply plate provided above the heat medium channel, the fuel supply plate having a plurality of holes for passing the liquid fuel,

wherein a protrusion is provided on a fuel outflow side from the plurality of holes of the fuel supply plate to partition the plurality of holes.

4. The heat exchanger according to claim 3, wherein the protrusion is integrated with the fuel supply plate.

5. The heat exchanger according to claim 3, wherein the protrusion is constituted by a lattice member provided separately from the fuel supply plate.

6. A heat exchanger comprising:

a heating medium channel for passing a high-temperature heating medium;

a fuel channel provided adjacent to the heating medium channel and separated from the heating medium channels through a partition wall, the fuel channels being supplied with liquid fuel from above the heating medium channel to vaporize the liquid fuel by heat exchange with the high-temperature heating medium; and

a fuel supply plate provided above the heat medium channel, the fuel supply plate having a plurality of holes for passing the liquid fuel,

wherein a groove is provided on a fuel outflow side from the plurality of holes of the fuel supply plate to partition the plurality of holes.

7. The heat exchanger according to claim 1, wherein the liquid fuel is a mixed fuel of methanol and water for producing hydrogen required for a fuel battery, and the mixed fuel vaporized is supplied to a reforming reactor for reforming methanol to

produce hydrogen.

8. The heat exchanger according to claim 2, wherein the liquid fuel is a mixed fuel of methanol and water for producing hydrogen required for a fuel battery, and the mixed fuel vaporized is supplied to a reforming reactor for reforming methanol to produce hydrogen.

9. The heat exchanger according to claim 3, wherein the liquid fuel is a mixed fuel of methanol and water for producing hydrogen required for a fuel battery, and the mixed fuel vaporized is supplied to a reforming reactor for reforming methanol to produce hydrogen.

10. The heat exchanger according to claim 4, wherein the liquid fuel is a mixed fuel of methanol and water for producing hydrogen required for a fuel battery, and the mixed fuel vaporized is supplied to a reforming reactor for reforming methanol to produce hydrogen.

11. The heat exchanger according to claim 5, wherein the liquid fuel is a mixed fuel of methanol and water for producing hydrogen required for a fuel battery, and the mixed fuel vaporized is supplied to a reforming reactor for reforming methanol to produce hydrogen.

12. The heat exchanger according to claim 6, wherein the liquid fuel is a mixed fuel of methanol and water for producing hydrogen required for a fuel battery, and the mixed fuel vaporized is supplied to a reforming reactor for reforming methanol to produce hydrogen.

13. A fuel battery heat exchanger comprising:

a plurality of first tube sheets each defining therein a first channel and a second channel for passing a first fluid to be heated in directions reverse to each other, and an intermediate channel for connecting end portions of the first passage and the second passage with each other; and

a plurality of second tube sheets disposed between the adjacent first tube sheets, the second tube sheets each defining therein a heating channel for passing a second fluid for heating the first fluid,

wherein the second fluid passes through the heating channel in a direction perpendicular to a direction of passing the first fluid through the first channel and the second channel.

14. The fuel battery heat exchanger as claimed in claim 13, wherein each of the second tube sheets has an outer fin for forming the heating channel.

15. The fuel battery heat exchanger as claimed in claim 14, wherein each of the second tube sheets includes a first metal plate and a second metal plate; and

the outer fin is sandwiched between the first metal plate and the second metal plate.

16. The fuel battery heat exchanger according to claim

13, wherein the first fluid flows from the first channel to the second channel through the intermediate channel; and

the second fluid flows in a direction from the second channel toward the first channel.

17. The fuel battery heat exchanger as claimed in claim 13, wherein each of the first tube sheets includes:

a third metal plate defining the first channel, the second channel and the intermediate channel; and

a pair of partition plates sandwiching a third metal plate.

18. The fuel battery heat exchanger as claimed in claim 17, wherein the third metal plate defines the first channel, the second channel and the intermediate channel to be folded back by 180 degrees in a longitudinal end portion of the third metal plate.

19. The fuel battery heat exchanger as claimed in claim 18, wherein each of the partition plates defines a first through hole and a second through hole, and a third through hole;

the first metal plate defines a fourth through hole and a fifth through hole provided to match the first and second through holes of each of the partition plates; and

the second metal plate defines a sixth through hole provided to match the third through hole of each of the partition

plates.

20. The fuel battery heat exchanger as claimed in claim 19, wherein an inner space of the fourth hole of each of the first metal plate communicates with an inner space of the first through holes to form an inlet tank portion for introducing the first fluid into the first channel of each of the first tube sheet.

21. The fuel battery heat exchanger as claimed in claim 19, wherein an inner space of the fifth through hole of each of the first metal plates communicates with an inner space of the second through hole of each of the partition plates to form an outlet tank portion for collecting the first fluid flowing from the second channel of each of the first tube sheet.

22. The fuel battery heat exchanger as claimed in claim 19, wherein an inner space of the sixth through hole of each of the second metal plate communicates with an inner space of the third through hole of each of the partition plates to form the intermediate tank including the plurality of intermediate channels of the heat transfer element.

23. The fuel battery heat exchanger as claimed in claim 17, wherein each of the first tube sheets includes an inner fin

in the third metal plate.

24. The fuel battery heat exchanger as claimed in claim 13, wherein the heating fluid introduced from a side of the second channel.

25. The fuel battery heat exchanger as claimed in claim 13, wherein the first channel is larger in volume than the second channel.

26. The fuel battery heat exchanger as claimed in claim 13, the first and second channels have an inner fin, the inner fin increases the flowing resistance of the first fluid in the flowing direction along with the first and second channels to be larger than the flowing resistance of the mixed fluid that flows in the width direction.

27. A fuel battery heat exchanger comprising:

a plurality of tube sheets each defining therein a first channel for passing a first fluid to be heated;

a plurality of outer fins disposed between the adjacent tube sheets, the outer fins each defining therein a second channel for passing a second fluid for heating the first fluid; and

an inlet for introducing the first fluid into the first tube sheets in a direction perpendicular to the first and the second channel,

wherein the first channel and the second channel are defined perpendicular to each other; and

28. The fuel battery heat exchanger as claimed in claim 27, wherein the tube sheets and outer fins are arranged in parallel with each other.

29. The fuel battery heat exchanger as claimed in claim 28, wherein the tube sheets have a plurality of first openings respectively; and

the plurality of first openings are connected with each other to form an inlet tank space.

30. The fuel battery heat exchanger as claimed in claim 29, further comprising a fuel supply plate having a plurality of holes for passing the first fluid, the fuel supply plate

disposed in the inlet tank space.

31. The fuel battery heat exchanger as claimed in claim 27, wherein each of the tube sheets includes an inner fin.

32. The fuel battery heat exchanger as claimed in claim 27, wherein the first channel includes:

a first heat exchanging portion for passing the first fluid in a first direction; and

a second heat exchanging portion for passing the first fluid in a second direction opposite to the first direction.

33. The fuel battery heat exchanger as claimed in claim 32, wherein the tube sheets have a plurality of second openings respectively; and

the plurality of second openings are connected with each other to form an outlet tank space.

34. The fuel battery heat exchanger as claimed in claim 33, wherein the outlet tank space is defined above the second heat exchanging portion; and

an outlet for discharging the first fluid is provided to the outlet tank space.

35. The fuel battery heat exchanger as claimed in claim

32, wherein the first exchanging portion and the second exchanging portion is communicated with each other through a intermediate passage.

36. The fuel battery heat exchanger as claimed in claim 32, wherein two laminated plates form each of the tube sheets.

37. The fuel battery heat exchanger as claimed in claim 27, the first channel have an inner fin, the inner fin increases the flowing resistance of the first fluid in the flowing direction along with the first channel to be larger than the flowing resistance of the mixed fluid that flows in the width direction.